

Electronic Supplementary Material

Graphene oxide nanosheets supported Pt concave nanocubes with high-index facets for high-performance H₂O₂ sensing

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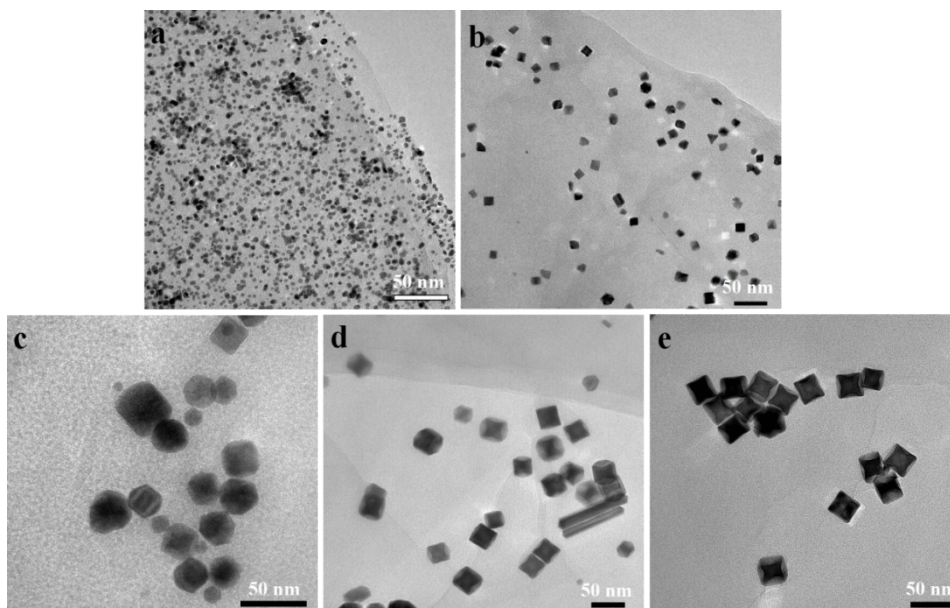


Figure S1. TEM images of Pt CNC-rGO synthesized using the standard method at different volume of glycine (a-e: 0 mg, 25 mg, 50 mg, 125 mg, 175 mg).

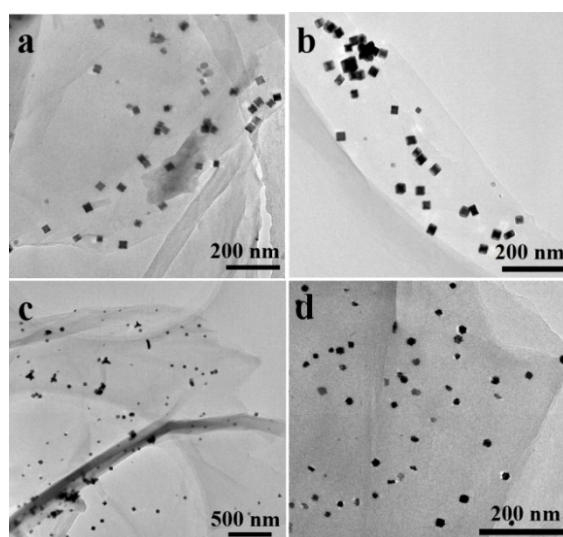


Figure S2. TEM images of Pt CNC-rGO prepared using the standard method after (a-d: 3h, 6h, 9h, 12h) of reaction.

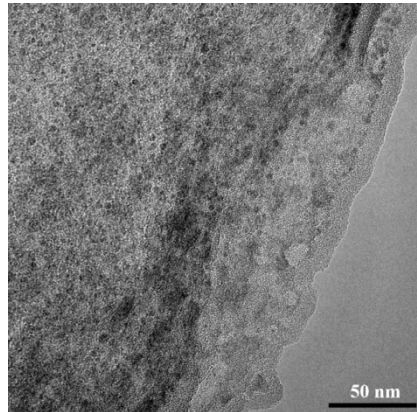


Figure S3. TEM images of Pt CNC-rGO synthesized using the standard method, except the temperature at 150 °C.

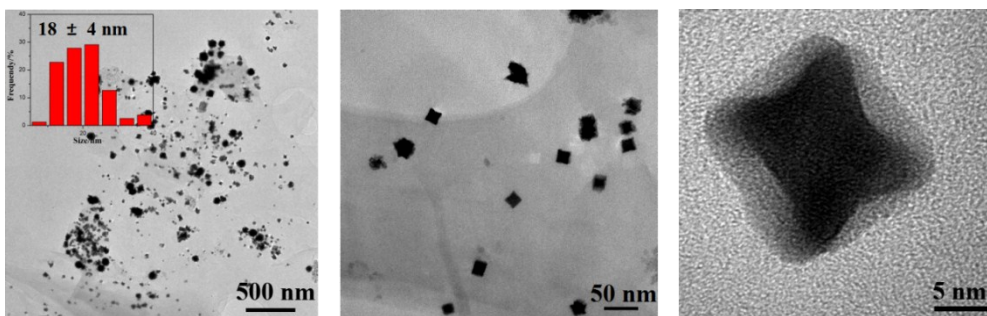


Figure S4. TEM images of Pt CNC-rGO synthesized using the standard method, except the temperature at 180 °C. Size-distribution histogram inset.

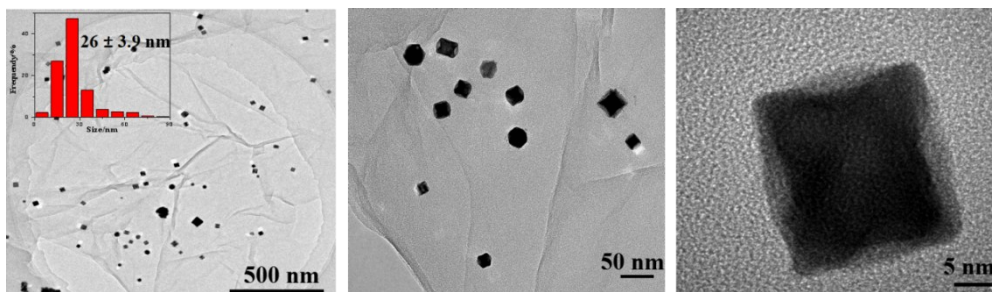


Figure S5. TEM images of Pt CNC-rGO synthesized using the standard method, except the temperature at 200 °C. Size-distribution histogram inset.

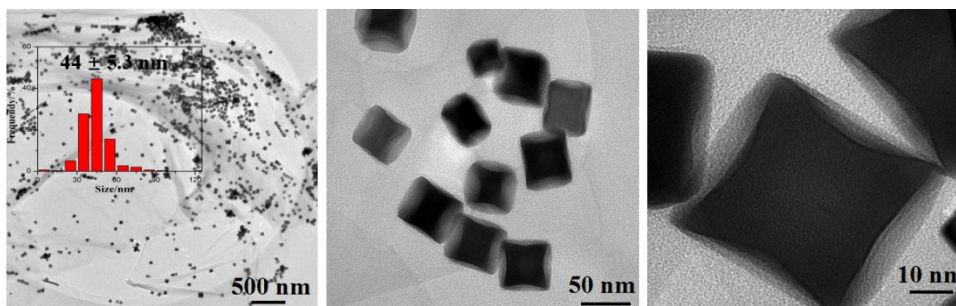
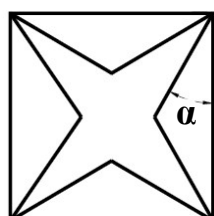


Figure S6. TEM images of Pt CNC-rGO synthesized using the standard method, except the temperature at 220 °C. Size-distribution histogram inset.



Angle {hk0}	α°
{810}	7.2
{710}	8.1
{610}	9.5
{510}	11.3
{410}	14.0
{720}	15.9
{310}	18.4
{830}	20.6
{520}	21.8
{730}	23.2

Figure S7. The theoretical relationship between interfacial angles and high-index factors for a concave cube.

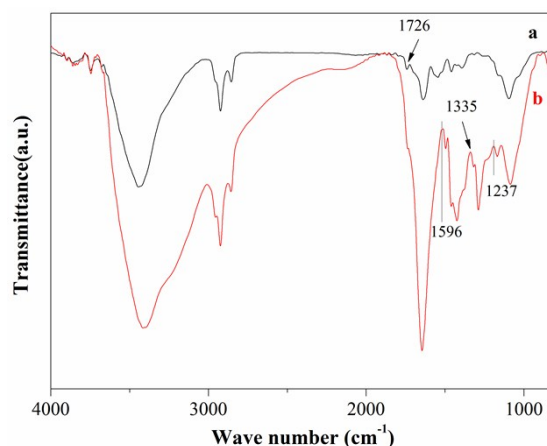


Figure S8. The FT-IR spectrum of GO (a) and PVP-functional GO.

The FT-IR spectrum was shown in Figure S8. Infrared spectral analysis reflected the structure of GO was changed by PVP modification. By comparing the two curves, the transmittance of stretching vibration peaks at 1726 cm^{-1} ($\text{C}=\text{O}$) was disappeared in the spectra of PVP-functional GO, indicating that certain chemical bonds were appeared between some functional groups on the surface of GO sheets and the PVP molecules[1]. In additional, some new peaks caused by PVP at 1596 cm^{-1} , 1335 cm^{-1} , 1237 cm^{-1} were observed on PVP-functional GO sample[2]. After modification, the stable of GO solution was improved and the binding force between metal particles and GO was enhanced.

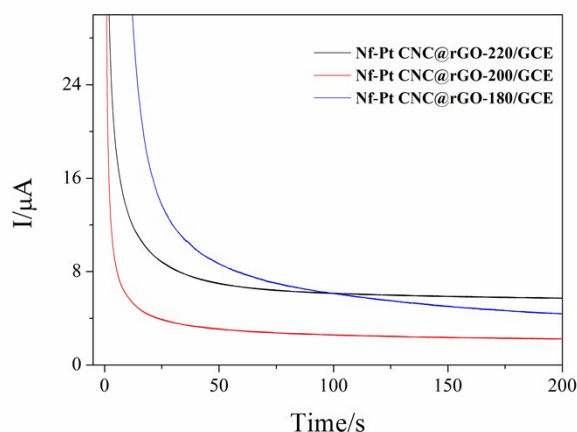


Figure S9. Chronoamperometric profiles of modified GCE in N_2 -saturated 0.1 M PBS ($\text{pH } 7.2$) containing $1\text{ mM H}_2\text{O}_2$.

Reference

- [1] X. Zhi, H. Fang and C. Bao, *Biomaterials*, 2013, **34**, 5254-5261.
- [2] Y. Zhang, H. J. Chi and W. H. Zhang, *Nano-Micro Lett.*, 2014, **6**, 80-87.